Contribution ID: **8** Type: **not specified**

Structures and Dynamics in the Outer Regions of Turbulent Protoplanetary Disks.

Thursday, 7 August 2014 11:00 (30 minutes)

In this talk we present current results from our research using global 3D non-ideal MHD stratified disk simulations. We focus on axisymmetric and non-axisymmetric structures, evocate by the magneto-rotational instability in the outer regions of a protoplanetary disk. We performed non-ideal global 3D MHD stratified simulation of the dead-zone outer edge using the FARGO MHD code PLUTO. The stellar and disk parameters are taken from the current best-fit models for the systems HH30, CB26, and Butterfly-Star. The 2D temperature and density profiles are calculated consistently from a given surface density profile and Monte-Carlo radiative transfer. The 2D Ohmic resistivity profile is calculated using the dust chemistry model. The model with strong Ohmic dissipation develops a large zonal-flow structure at the outer edge of the dead-zone. This structure manifests itself as a gap followed by a ring structure in the surface density. We confirm that this structure could be observed with current ALMA configurations. Our models show a new possibility to generate density gaps in the outer regions of protoplanetary disks other than a planet.

Primary author: Dr FLOCK, Mario (DSM/IRFU/SAP CEA)

Presenter: Dr FLOCK, Mario (DSM/IRFU/SAP CEA)

Session Classification: Thursday Morning

Track Classification: Workshop Main Programme